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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/647,431

08/26/2003

Hitoshi Okanobori

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05/16/2006

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EXAMINER

HAILEY, PATRICIA L

ART UNIT

PAPER NUMBER

1755

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,431

Applicant(s)

OKANOBORI ET AL.

Examiner

Patricia L. Hailey

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on August 23, 2003.

Claim Objections

2. *Claim 7 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.*

Claim 7 fails to further limit the subject matter of claim 1, from which claim 7 depends. Claim 7 recites an intended use for the catalyst particle of claim 1, as opposed to further defining said catalyst particle by, for example, further defining the carrier, the active metal, etc.

Applicants are respectfully reminded that, pending Applicants' amendment to claim 7, this claim could be subject to an election by original presentation, and subsequently withdrawn from the Examiner's consideration.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. *Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

Claim 4 is indefinite because the phrases "high cavity density" and "large surface area" are relative. From the claim, the metes and bounds of patent protection desired cannot be determined.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. *Claims 1, 2, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No 62-079289 (hereinafter "the Japanese Patent").*

The Japanese Patent teaches a novel compound comprising a metal component supported on a carbonaceous mesophase material. Examples of the metal component include ruthenium, platinum, and combinations thereof; examples of the carbonaceous mesophase material include bulk mesophase carbon. Additionally, the novel compound can be used as a "catalyst for various chemical reactions". See the Purpose and the Constitution of the Japanese Patent.

Claim 7 is considered read upon by the Japanese Patent as the limitation "used for the dehydrogenation of alcohols" is one of intended use, and does not further limit or define the claimed catalyst particle.

In view of these teachings, the Japanese Patent anticipates claims 1, 2, 6, and 7.

7. *Claims 1 and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Romanenko et al. (U. S. Patent No. 6,753,290).*

Romanenko et al. disclose catalyst compositions comprising crystallites of catalytically active palladium, or of palladium and at least one Group VIII metal, applied to the surface of a carbon material, wherein a mesoporous graphite-like material with an average mesopore size ranging from 40 to 400 Å (considered to read upon claim 5 regarding the "cavities...an average diameter of 0.5 to 5 nm", or 5-50 Å, in which metal crystallites are distributed in the volume of the carbon material in such a

manner that the distribution peaks of the crystallites should be at a distance from the outer surface of the granule corresponding to 1 to 30% of its radius. See the Abstract of Romanenko et al., as well as col. 3, lines 48-61.

The catalyst composition comprises crystallites of: palladium and rhodium, palladium and ruthenium, or palladium or platinum. See col. 3, lines 62-64 of Romanenko et al. This disclosure is considered to read upon Applicants' claim limitations regarding the "cavities formed on a surface of said carrier", the "active metal", and the "carrier composed of a carbon material", as recited in **claims 1 and 6**.

Exemplary carbon materials include those prepared by the heat treatment of plastics, and also synthesized in accordance "with a special technology" from gaseous hydrocarbons. See col. 4, lines 37-43 of Romanenko et al.

Claim 7 is considered read upon by Romanenko et al., as the limitation "used for the dehydrogenation of alcohols" is one of intended use, and does not further limit or define the claimed catalyst particle.

In view of these teachings, Romanenko et al. anticipate claims 1 and 5-7.

8. *Claims 1, 3, 6, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Baker et al. (U. S. Patent No. 6,485,858).*

Baker et al. disclose graphite nanofiber catalyst systems comprising one or more noble metals, alloys or bimetallics thereof, on a graphite nanofiber having a surface area from about 0.2 to 3000 m²/g. The nanofiber is comprised of graphite sheets that are

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substantially parallel or perpendicular to the longitudinal axis of the nanofiber, and has at least 95% of the sheets' exposed surfaces comprised of edge regions. See col. 2, lines 29-52 of Baker et al., which also discloses platinum as an exemplary noble metal (col. 2, lines 35-37).

The graphite nanofiber catalyst system, because of its affinity towards hydrogen, can be used to dehydrogenate organic compounds. See col. 7, lines 25-35 of Baker et al. (considered to read upon claim 7).

In view of these teachings, Baker et al. anticipate claims 1, 3, 6, and 7.

9. *Claims 1 and 4-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhou et al. (U. S. Patent No. 6,746,597).*

Zhou et al. disclose a supported noble metal catalyst comprising an inorganic or oxide or carbon support holding nanometer-sized crystallites of one or more metal components (i.e., particles of less than 5 nanometers, more preferably less than 2 nanometers, see col. 2, lines 62-67 of Zhou et al.), where the metal or metals include at least one noble (platinum-group) metal such as palladium, in combination with one or more of platinum, rhenium, rhodium, ruthenium, osmium, iridium, gold, or combinations thereof. See col. 5, lines 1-7 of Zhou et al. (considered to read upon **claims 1 and 6**).

Examples of the support include activated carbon; the support should preferably be a porous material having a surface area of more than 20 m²/g, and up to 500 m²/g. See col. 5, lines 16-23 of Zhou et al. (considered to read upon **claim 4**). Although this

reference does not explicitly disclose a pore size for the “porous support”, one skilled in the art would readily deduce that said support would have to accommodate the noble metal crystallite particle sizes disclosed above (greater than 5 nanometers, more preferably greater than 2 nanometers); therefore, the “average particle diameter” recited in **claim 5** is considered encompassed by Zhou et al.

The catalyst disclosed in Zhou et al. can be useful for various dehydrogenation reactions, including alcohol dehydrogenation. See col. 7, lines 8-11 of Zhou et al. (considered to read upon **claim 7**).

In view of these teachings, Zhou et al. anticipate claims 1 and 4-7.

Conclusion

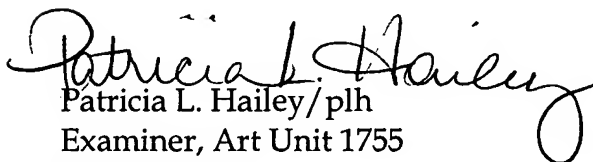
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patricia L. Hailey/plh
Examiner, Art Unit 1755
May 10, 2006


J.A. LORENZO
SUPERVISORY PATENT EXAMINER